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IN THE
Supreme Court of the United States
OCTOBER TERM, 1992

WILLIAM DAUBERT, *et al.*,
Petitioners,

v.

MERRELL DOW PHARMACEUTICALS, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit

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BRIEF *AMICUS CURIAE* OF THE AMERICAN TORT REFORM ASSOCIATION IN SUPPORT OF RESPONDENT

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TABLE OF CONTENTS

	Page
TABLE OF AUTHORITIES	ii
INTEREST OF THE *AMICUS CURIAE*	1
RULES INVOLVED	2
SUMMARY OF ARGUMENT	2
ARGUMENT	5
I. OPINION TESTIMONY BY EXPERTS THAT LACKS SCIENTIFIC SUPPORT REQUIRES JUDICIAL SCREENING	5
A. Opinions, To Be Admissible, Must Meet Minimum Scientific Standards	5
B. Evidence Must Be Based on Present Knowledge	8
C. Without Judicial Screening, Abuse Is Inevitable	10
II. THE FEDERAL RULES OF EVIDENCE ALLOW AND REQUIRE TRIAL COURTS TO CONTROL ABUSES OF OPINION TESTIMONY BY EXPERTS	12
A. Rule 104(a)	13
B. Rules 401 and 402	13
C. Rule 403	14
D. Rules 701, 702 and 703	15
III. PETITIONERS PROPOSE A RADICAL CHANGE, WHICH SHOULD BE REJECTED	17
IV. "TOXIC TORT" CLAIMS PARTICULARLY REQUIRE JUDICIAL SCREENING OF OPINION TESTIMONY	20
A. Lack of Factual Basis	22
B. Lack of Scientific Theory	24
C. Lack of Scientific Methodology	26
CONCLUSION	29
ADDENDUM	1a

TABLE OF AUTHORITIES

Cases: Page

Adams v. *Canon*, 1 Dyer 53bn., 73 Eng. Rep. 117n. (St. Ch. 1622) 5

In re "Agent Orange" Product Liability Litigation, 818 F.2d 145 (2d Cir. 1987), *cert. denied sub nom. Pinkney* v. *Dow Chem. Co.*, 484 U.S. 1004 (1988) 21

In re "Agent Orange" Product Liability Litigation, 611 F. Supp. 1223 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987), *cert. denied sub nom. Lombardi* v. *Dow Chem. Co.*, 487 U.S. 1234 (1988) 13, 21, 27

In re Air Crash Disaster, 795 F.2d 1230 (5th Cir. 1986) 9

Barefoot v. *Estelle*, 463 U.S. 880 (1983) 10, 13

Bourjaily v. *United States*, 483 U.S. 171 (1987) 13

Carter v. *Boehm*, 3 Burr. 1905, 97 Eng. Rep. 1162 (K.B. 1766) 6

Celotex Corp. v. *Catrett*, 477 U.S. 317 (1986) 18

Christophersen v. *Allied-Signal Corp.*, 939 F.2d 1106 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992) 14, 15, 16

Coal Resources, Inc. v. *Gulf & Western Industries, Inc.*, 865 F.2d 761 (6th Cir. 1989) 16

Dawsey v. *Olin Corp.*, 782 F.2d 1254 (5th Cir. 1986) 6

DeLuca v. *Merrell Dow Pharmaceuticals, Inc.*, 911 F.2d 941 (3d Cir. 1990) 16

Flood v. *Kuhn*, 407 U.S. 258 (1972) 17

Frye v. *United States*, 293 Fed. 1013 (D.C. Cir. 1923) 2, 4, 5, 12, 14-19

Galloway v. *United States*, 319 U.S. 372 (1943) 13, 18

Hines v. *Consolidated Rail Corp.*, 926 F.2d 262 (3d Cir. 1991) 15

Huddleston v. *United States*, 485 U.S. 681 (1988) 14

Illinois Brick Co. v. *Illinois*, 431 U.S. 720 (1977) 17

Lima v. *United States*, 708 F.2d 502 (10th Cir. 1983) 16

Loudermill v. *Dow Chem. Co.*, 863 F.2d 566 (8th Cir. 1988) 7, 15

TABLE OF AUTHORITIES—Continued

Page

Lynch v. *Merrell-National Labs.*, 830 F.2d 1190 (1st Cir. 1987) 16

Mid-State Fertilizer Co. v. *Exchange Nat'l Bank*, 877 F.2d 1333 (7th Cir. 1989) 9, 10

Monessen S.W. Ry. v. *Morgan*, 486 U.S. 330 (1988) 17

In re Paoli R.R. Yard PCB Litigation, 706 F. Supp. 358 (E.D. Pa. 1988), *rev'd*, 916 F.2d 829 (3d Cir. 1990), *cert. denied sub nom. General Electric Co.* v. *Knight*, 111 S. Ct. 1584 (1991), *on remand*, 1992 WL 315216 etc. (E.D. Pa. 1992), *appeals pending* (3d Cir. Nos. 92-1995 etc.) 2, 10, 16, 21-29

Pennsylvania Dental Ass'n v. *Medical Service Ass'n*, 745 F.2d 248 (3d Cir. 1984), *cert. denied*, 471 U.S. 1016 (1985) 17

Queenan v. *Oklahoma*, 190 U.S. 548 (1903) 6

Richardson v. *Richardson-Merrell, Inc.*, 857 F.2d 823 (D.C. Cir. 1988), *cert. denied*, 493 U.S. 882 (1989) 16

Salem v. *United States Lines Co.*, 370 U.S. 31 (1962) 13

Spring Co. v. *Edgar*, 99 U.S. 645 (1879) 13, 18

Square D Co. v. *Niagara Frontier Tariff Bureau, Inc.*, 476 U.S. 409 (1986) 17

Stillwell & Bierce Mfg. Co. v. *Phelps*, 130 U.S. 520 (1889) 18

Stoleson v. *United States*, 708 F.2d 1217 (7th Cir. 1983) 3

Sweger v. *Texaco, Inc.*, 930 F.2d 35 (10th Cir. 1991) 3

Tonkovich v. *Department of Labor & Industries*, 31 Wash. 2d 220, 195 P.2d 638 (1948) 3

United States v. *Abel*, 469 U.S. 45 (1984) 12

United States v. *Baller*, 519 F.2d 463 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975) 7

United States v. *Elkins*, 885 F.2d 775 (11th Cir. 1989), *cert. denied*, 494 U.S. 1005 (1990) 6

United States v. *Jakobetz*, 955 F.2d 786 (2d Cir.), *cert. denied*, 113 S. Ct. 104 (1992) 14

TABLE OF AUTHORITIES—Continued

	Page
Viterbo v. *Dow Chem. Co.*, 826 F.2d 420 (5th Cir. 1987)	8
Winans v. *New York & E.R.R.*, 21 How. 88 (1859)	13
Constitutional Provisions:	
U.S. Constitution, Seventh Amendment	18
Rules:	
Federal Rules of Civil Procedure, Rule 56	18
Federal Rules of Evidence, Rule 104	2, 4, 8, 12, 13, 18, 1a
Rule 401	2, 4, 12, 13, 14, 19, 1a
Rule 402	2, 4, 12, 13, 14, 19, 1a
Rule 403	2, 4, 5, 12, 14, 15, 16, 18, 19, 21, 22, 1a
Rule 602	2, 4, 6, 12, 16, 2a
Rule 701	2, 4, 6, 12, 15, 2a
Rule 702	2, 4, 6, 12, 14, 15, 16, 17, 19, 20, 22, 2a
Rule 703	2, 4, 5, 6, 12, 14, 15, 16, 17, 19, 21, 22, 2a
Rule 704	2, 3a
Rule 705	2, 6, 3a
Rule 1101	2, 13, 3a
Miscellaneous:	
Appendix, *In re Paoli R.R. Yard PCB Litigation*, Nos. 88-1973 etc. (3d Cir.)	22, 24-29
Berger, *A Relevancy Approach to Novel Scientific Evidence*, 115 F.R.D. 89 (1987)	11, 14
Black & Lilienfield, *Epidemiologic Proof in Toxic Tort Litigation*, 53 FORDHAM L. REV. 732 (1984)	9
CASARETT & DOULL'S TOXICOLOGY (M. Amdur *et al.* 4th ed. 1991)	23
Committee on Rules of Practice and Procedure, Judicial Conference, *Rules of Evidence for the United States Courts and Magistrates*, 51 F.R.D. 315 (1971)	15
P. CUTLER, PROBLEM SOLVING IN CLINICAL MEDICINE (2d ed. 1985)	27

TABLE OF AUTHORITIES—Continued

	Page
M. DELP, *et al.*, MAJOR'S PHYSICAL DIAGNOSIS (9th ed. 1981)	27
Endicott, *Quack Medicine and Tort Litigation: The Scientific Method or 'Methodology?'*, 7 TOXICS L. REP. 288 (1992)	10
Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40 (1902)	7, 14
Imwinkelried, *Science Takes the Stand: The Growing Misuse of Expert Testimony*, 26 THE SCIENCES 20 (Nov.-Dec. 1986)	11
R. JUDGE, *et al.*, CLINICAL DIAGNOSIS (4th ed. 1982)	27
REPORT OF THE TORT POLICY WORKING GROUP 35 (1986)	10
Starr, *Overview*, in PRESIDENT'S COUNCIL ON COMPETITIVENESS, A PLAN TO IMPROVE AMERICA'S SYSTEM OF CIVIL JUSTICE 13 (1992)	12
J. SWIFT, A MODEST PROPOSAL (1729)	17
Transcript of depositions and pretrial hearing, *In re Paoli R.R. Yard PCB Litigation*, Nos. 86-2229 etc. (E.D. Pa. July 1992)	10, 23, 24, 26, 28
J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE (1992)	14
Weinstein, *Improving Expert Testimony*, 20 U. RICH. L. REV. 473 (1986)	5, 11
Weinstein, *Role of Expert Testimony and Novel Scientific Evidence in Proof of Causation* (1987)	12
28 TRIAL 101 (Dec. 1992)	10

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BRIEF *AMICUS CURIAE* OF THE AMERICAN TORT REFORM ASSOCIATION IN SUPPORT OF RESPONDENT

INTEREST OF THE *AMICUS CURIAE* [1]

The American Tort Reform Association was established in 1986. It is a bipartisan coalition of approximately 400 non-profit organizations, professional societies, trade associations, corporations and small businesses, advocating improvements in the efficiency and fairness in the civil justice system. Members include the American Medical Association, the Council of Community Blood Centers, the National Association of Manufacturers, and a number of industrial corporations. ATRA has filed briefs *amicus curiae* in this and other courts in cases raising issues of significance to the functioning of the civil justice system. Some of ATRA's members are parties in civil actions in which the admissibility of particular opinion testimony is disputed. Three members (General Electric Company, Monsanto Company, and Southeastern Pennsylvania Transportation Authority)

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[1] Petitioners and respondent have consented to the filing of this brief; their letters to that effect have been lodged with the Clerk.

are defendants in pending litigation,[2] discussed herein, in which issues relating to the admissibility of expert opinion testimony have predominated.[3]

ATRA is concerned that appropriate standards govern the use of opinion testimony from experts. ATRA submits that, with or without the rule of *Frye* v. *United States*, 293 Fed. 1013 (D.C. Cir. 1923), this Court should reaffirm the broad and proper discretion of federal trial judges under the Federal Rules of Evidence to prohibit the use of opinion testimony that, although offered by a witness claiming scientific expertise, is not the product of scientific reasoning or is derived from a non-scientific methodology or is unsupported by an adequate factual foundation.

RULES INVOLVED

Rules 104(a), 401, 402, 403, 602, 701, 702, 703, 704 705, and 1101(d)(1) of the Federal Rules of Evidence are reproduced in the addendum hereto.

SUMMARY OF ARGUMENT

Witnesses in Anglo-American courts generally are not allowed to testify to their opinions. That is a rule centuries old, most recently embodied in Rules 602 and 701 of the Federal Rules of Evidence.

An exception to the rule is the "expert" witness. The qualified expert may offer opinions that are based on his or her field of expertise. There is a *quid pro quo*, however: the expert is to impart to the factfinder only the learning of the discipline in which the expert is credentialed. If the expert instead goes outside that field of expertise, or presents unsupported theories, or relies on methodologies alien to the discipline, then the expert

[2] *In re Paoli R.R. Yard PCB Litigation*, 706 F. Supp. 358 (E.D. Pa. 1988), *reversed*, 916 F.2d 829 (3d Cir. 1990), *cert. denied sub nom. General Electric Co.* v. *Knight*, 111 S. Ct. 1584 (1991), *on remand*, 1992 WL 315216 etc. (E.D. Pa. 1992), *appeals pending* (3d Cir. Nos. 92-1995 etc.).

[3] Respondent is owned by a company of which the majority of the stock is owned by an ATRA member, Dow Chemical Company.

is not speaking as the voice of that science and has become just an ordinary witness offering what in effect is lay opinion testimony or conjecture. Worse, the expert because he or she is titled as such, and invokes the jargon of science, is likely to command credence that a lay witness could not.

In the past two decades the need to confine experts to true expert opinions has been highlighted by the confluence of two trends. The first is the recent proliferation of a new kind of tort action that claims illness was caused by exposure to chemicals in tiny amounts not previously measurable—so-called "toxic tort" cases. The second is wide availability of some individuals, holding degrees in such disciplines as medicine, chemistry, or toxicology, who are willing to offer opinions that fly in the face of the findings, and ignore the methodology, of the very disciplines in which they are credentialed. In the words of one court, nowadays "there is not much difficulty in finding a medical expert witness to testify to virtually any theory of medical causation short of the fantastic." *Stoleson* v. *United States*, 708 F.2d 1217, 1222 (7th Cir. 1983). In some cases, even "the fantastic" has not been a barrier.[4]

The situation district judges most often encounter in civil litigation is not the expert who holds some sort of minority view on a topic undergoing scientific debate. Rather, what usually is offered is not novel science, but non-science. It is the expert who uses a degree—in medicine, for example—to gain entry to the courtroom, but then offers opinions that are not based on medical methods or reasoning at all. Some would call such a witness a charlatan. It is not necessary to judge the witness' motives or sincerity, however, to conclude that such a person

[4] *Cf., e.g., Sweger* v. *Texaco, Inc.*, 930 F.2d 35 (10th Cir. 1991) (expert "believed that Mr. Sweger's cancer could have been caused by exposure to a single carcinogenic molecule of defendant's motor oils") (text in Westlaw); *Tonkovich* v. *Department of Labor & Industries*, 31 Wash. 2d 220, 195 P.2d 638 (1948) (expert opinion that injury from fall caused cancer).

has gone beyond his or her credentials, and speaks not as the voice of science, but simply as an individual holding an opinion. Expert testimony should not be admissible when it consists of nothing but a resumé plus an assertion.

Most trial judges have been able to deal with such cases. They have considered themselves obliged by law to exclude such opinions from the evidence weighed by juries in deciding issues of liability. One formulation some courts follow, which is challenged by petitioners in this case, is that of *Frye* v. *United States*, 293 Fed. 1013 (D.C. Cir. 1923). As *Frye* put it, "while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery," still the basis for the opinion ("the thing from which the deduction is made") "must be sufficiently established to have gained general acceptance in the particular field." 293 Fed. at 1014.[5]

Unsupported opinions by experts are regularly excluded also in circuits that never adopted *Frye*. For with or without *Frye*, the Federal Rules of Evidence give ample authority—and, indeed, a responsibility—for trial judges to exclude such opinion testimony. Rule 104(a) directs that preliminary questions of admissibility "shall be determined by the court." Rules 401 and 402 direct the exclusion of evidence that is not relevant, defining relevance in a way that excludes speculation. Rules 602 and 701 prohibit most non-expert opinion. Rule 403 (which petitioners scarcely mention) specifically authorizes exclusion of evidence when its probative value, if any, is exceeded by the likelihood of confusion or misleading the jury. And Rules 702 and 703 have been relied on in countless cases to exclude proffered opinions that will not assist the trier of fact, or that lack a basis "reasonably relied upon by experts in the particular

[5] *Frye* seems to have contemplated instances in which scientists in a field may be divided on a pertinent question. But divisions among two respectable schools of scientists seldom are the issue in contemporary toxic-tort litigation.

field." Most of these decisions do not depend at all on *Frye*.[6] Indeed, the trial court in the present case relied on Federal Rules of Evidence 403 and 703. J.A. 229, 235.

No one heretofore has seriously thought that trial judges do not have the authorization and duty under the Federal Rules of Evidence to exclude scientific opinions that are not supportable in science. Yet that is where petitioners' argument leads. What is most disturbing about petitioners' position is that they do not stop by attacking the *Frye* formulation. They go further and reject, by distinguishing or by ignoring, each of the pertinent Federal Rules—leaving no function for the trial judge except essentially a ministerial one: to verify the expert's resumé, and then allow him or her to propound opinions at will.

Amicus submits that *Frye* offered a sound formulation, in no wise rejected in the Federal Rules, and that there is no basis on which to disapprove it. More importantly, however, this Court should recognize that, even without *Frye*, the Federal Rules of Evidence call for the exclusion by trial judges of opinions that ignore objective facts, or disregard the fundamental principles of the expert's discipline, or fail to follow a scientifically recognized methodology.

ARGUMENT

I. OPINION TESTIMONY BY EXPERTS THAT LACKS SCIENTIFIC SUPPORT REQUIRES JUDICIAL SCREENING.

A. Opinions, To Be Admissible, Must Meet Minimum Scientific Standards.

A starting point of evidence law is that the opinions of a witness generally are not admissible.[7] See Fed. R.

[6] "In practice . . . courts today all tend to admit the same evidence whether or not they purport to apply the *Frye* standard." Weinstein, *Improving Expert Testimony*, 20 U. RICH. L. REV. 473, 478 (1986).

[7] "It is no satisfaction for a witness to say that he 'thinketh' or 'persuadeth himself.'" *Adams* v. *Canon*, 1 Dyer 53bn., 73 Eng. Rep.

[Continued]

Evid. 701.[8] Neither are facts of which the witness lacks personal knowledge. Fed. R. Evid. 602. An exception is made for opinions of "experts." Fed. R. Evid. 702, 703. An "expert" witness is accorded a status and prerogatives not allowed to any other witness in a court of law. The expert, unlike a lay person, may give opinions;[9] answer hypothetical questions;[10] and rely on hearsay.[11] The court at the beginning of the testimony will consider and endorse the expert's qualifications, and in instructing the jury may specifically refer to him or her by the exalted title of expert.[12] But the expert's opinions must meet certain minimal specified standards.

The concept underlying the Federal Rules of Evidence is that the usual evidentiary prohibitions on conjecture, speculation and opinion will be relaxed *if* the opinion is more than just a personal belief or notion of the witness—if the witness in effect serves as a conduit through which the trier of fact is hearing the knowledge and experience of that learned discipline, as understood by persons reasonably following the principles and methodology of that discipline.[13]

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[7] [Continued]

117n., 118n. (St. Ch. 1622) (attributing to Chief Justice Coke). See also *Carter* v. *Boehm*, 3 Burr. 1905, 1918, 97 Eng. Rep. 1162, 1168 (K.B. 1766) (Mansfield, C.J.) ("It is mere opinion; which is not evidence").

[8] Rule 701 permits lay opinion testimony only when rationally based on personal observation and helpful to the trier of fact. *Cf. Queenan* v. *Oklahoma*, 190 U.S. 548, 549-50 (1903).

[9] Fed. R. Evid. 702. The expert need not disclose underlying facts or data unless required to do so. Fed. R. Evid. 705.

[10] *Barefoot* v. *Estelle*, 463 U.S. 880, 903 (1983).

[11] *E.g., United States* v. *Elkins*, 885 F.2d 775, 786 (11th Cir. 1989), *cert. denied*, 494 U.S. 1005 (1990).

[12] *E.g., Dawsey* v. *Olin Corp.*, 782 F.2d 1254, 1266 (5th Cir. 1986).

[13] "An opinion that purports to answer a scientific question without having engaged in an appropriate scientific inquiry is incapable of providing a systematic explanation that satisfies our demand for

The expert will be testifying to matters assumed to be beyond the ordinary understanding and experience of jurors. For that reason, the jurors do not possess their ordinary capability to test the testimony they hear against their own experience and common sense. See Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54-55 (1902). That is particularly true when the opinions concern unseen substances and unobservable processes. And "[b]ecause of its apparent objectivity, an opinion that claims a scientific basis is apt to carry undue weight with the trier of fact." *United States* v. *Baller*, 519 F.2d 463, 466 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975). There is greater danger of charlatanry.

The Federal Rules of Evidence establish a sort of bargain between the court and the expert: The court agrees to let the expert testify, and to bestow all the special privileges accorded an expert witness. In return, the witness assumes obligations as well. The most important of these is that the witness will not give lay opinions, but will testify as to what *science* knows on the subject. The witness will not go outside that body of science, and offer instead what are only his own particular speculation and hunches. A witness who seeks to do that is rejecting the terms by which expert testimony is permitted. In such a situation, the trial court has an obligation not to allow such opinions in evidence. The expert's opinions need to have a basis that would be recognized as scientific by others who profess that discipline. "[I]f an expert opinion is so fundamentally unsupported that it can offer no assistance to the jury, then the testimony should not be admitted." *Loudermill* v. *Dow Chem. Co.*, 863 F.2d 566, 570 (8th Cir. 1988).

For an expert opinion to have reliability and be helpful to the factfinder, there needs to be: (1) a basis in fact, not speculation; (2) a theory founded in science; (3) a

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rational proof." Brief of the Carnegie Commission on Science, Technology and Government as *Amicus Curiae* at 7.

methodology founded in science.[14] Therefore the Federal Rules assign the judge a screening role. Questions concerning the qualification of a witness or the admissibility of evidence "shall be determined by the court." Fed. R. Evid. 104(a). An opinion should not be admissible if "the plaintiff's expert brought to court little more than his credentials and a subjective opinion." *Viterbo* v. *Dow Chem. Co.*, 826 F.2d 420, 421 (5th Cir. 1987).

B. Evidence Must Be Based on Present Knowledge.

The fundamental issue that this case concerns is whether liability decisions of the district courts—decisions of whether a party is at fault and must pay damages—are to be based on unscientific opinion and speculation. To exclude non-science opinions from court is not, as some *amici* warn, "dangerous" or "inimical to the search for truth."[15] The search for truth requires that scientific issues be debated in the many appropriate scientific fora—seminar rooms, peer-reviewed journals, laboratories and conferences. The development of scientific knowledge is if anything furthered, and certainly not inhibited, by refusing to make courtrooms available for the exposition in liability suits of conclusions not based on scientific principles and methodology.

Petitioners need to answer this question: If the scientific community—which has only academic and professional inquiry at stake—does not recognize an individual's assumptions or methodology as within that discipline, then why should the judiciary—which is concerned instead with the task of determining facts and causation as understood at the time of trial, so as to decide whether to

[14] Thus another *amicus* has suggested as a measure of admissibility, "has plaintiff's expert's claim been empirically tested or is it merely a hunch?" Brief of the Carnegie Commission, *supra*, at 21. "[C]ourts should focus on determining whether the expert engaged in recognized forms of scientific practice in reaching his or her conclusion." *Id.* at 5.

[15] Brief *Amici Curiae* of Physicians, Scientists, *et al.* at 14, 15, 16.

impose liability—be required to accept the same opinions as evidence in what ought to be an even more exacting arena? It would make no sense for the judicial system to become more gullible than the scientific community.[16]

It is one thing to point out that scientific knowledge sometimes proceeds irregularly, and to observe that even the majority of scientists may later turn out in retrospect to have been wrong about something. (The majority of scientists often are right in their conclusions, too.) It would be perverse for a court to order a party to pay damages based on the assumption that ordinary science is wrong, and that the correct answer will be found through a method that is not consistent with science at all.[17] What science may learn in the future, only the future knows. To decide cases, courts have no rational choice but to look at scientific knowledge as it exists now. And no legal system for compensating persons with injuries truly caused by chemicals can function in the long run if it cannot distinguish valid and provable claims from those that are based on nothing but conjecture.[18]

[16] "Professor Bryan would not accept from his students or those who submit papers to his journal an essay containing neither facts nor reasons; why should a court rely on the sort of exposition the scholar would not tolerate in his professional life?" *Mid-State Fertilizer Co.* v. *Exchange Nat'l Bank*, 877 F.2d 1333, 1339 (7th Cir. 1989). See also *In re Air Crash Disaster*, 795 F.2d 1230, 1234 (5th Cir. 1986) ("opinions that they might not be willing to express in an article submitted to a refereed journal").

[17] Contrary to the suggestion of one group of *amici*, see Brief of American Society of Law, Medicine and Ethics, *et al.* at 10-24, the policymaking standards of regulatory agencies in risk assessment are certainly not the touchstone for judicial determinations of causation and liability. Regulatory agencies are concerned with a different issue, risk. "A clear distinction currently exists between a standard of proof used in regulation and a standard used in determining tort liability." Black & Lilienfield, *Epidemiologic Proof in Toxic Tort Litigation*, 52 FORDHAM L. REV. 732, 777 (1984).

[18] It should not be assumed that all plaintiffs are on one side of this issue and all defendants on the other. Sometimes legitimate claims for damages are based on scientific proof. Where science supports a plaintiff's case, a defendant should not be permitted to

Excluding scientifically unsupported opinions from the courtroom determination of facts does not choke off new learning. The opinion testimony screened out by the district courts under the Federal Rules of Evidence is not news of discoveries from scientific pioneers who tear themselves away from their clinics and laboratories to spend a few minutes at the courthouse sharing their learning. Nearly always it is something quite different: the statements of what one observer referred to as the "demimonde of professional witnesses who devote the bulk of their time to litigation." [19]

C. Without Judicial Screening, Abuse Is Inevitable.

The efflorescence of non-science scientific opinions is not simply a lament of defendants. The courts have pointed it out: "ukase in the guise of expertise is a plague in contemporary litigation." *Mid-State Fertilizer Co.* v. *Exchange Nat'l Bank*, 877 F.2d 1333, 1340 (7th

use pseudo-science to avoid liability. And the legitimate plaintiffs have a strong interest in not having their cases buried in an avalanche of spurious claims, and in not having serious science supporting their contentions tainted by association with unsupportable methodologies.

[19] Endicott, *Quack Medicine and Tort Litigation: The Scientific Method or 'Methodology?'*, 7 TOXICS L. REP. 288, 292 (1992) (footnote omitted). *Cf., e.g.*, 28 TRIAL 101-13 (Dec. 1992) (advertisements by expert witnesses). Medical opinions in "toxic tort" cases often come not from treating physicians, but rather from doctors who see patients (if they see them at all) only on referral from attorneys. *E.g.*, a medical doctor whose opinions were offered in the *Paoli* case, discussed *infra* pp. 21-29:

> Q. Do you have any patients that you see on a regular basis who are not involved in litigation?
>
> A. No. . . .
>
> Q. And those examinations were conducted—we've heard a lot of testimony about, in a law office?
>
> A. That's clearly established, yes.

Deposition of Janette D. Sherman, M.D., in *Paoli*, *supra* n. 2, Nos. 86-2229 (E.D. Pa.) (hereinafter "P.D.") at 26; transcript of hearing in *Paoli* (E.D. Pa. July 29, 30, 1992) (hereinafter "P.T.") at 143.

Cir. 1989). The effects are so national in scope that federal officials have worried that

> it has become all too common for "experts" or "studies" on the fringes of or even well beyond the outer parameters of mainstream scientific or medical views to be presented to juries as valid evidence from which conclusions can be drawn.

REPORT OF THE TORT POLICY WORKING GROUP 35 (1986). Dozens of commentators have expressed similar dismay. *E.g.*, Imwinkelried, *Science Takes the Stand: The Growing Misuse of Expert Testimony*, 26 THE SCIENCES 20 (Nov.-Dec. 1986); Weinstein, *Improving Expert Testimony*, 20 U. RICH. L. REV. 473 (1986).

The unfortunate fact—but it is a fact—is that a certain number of degree-holding individuals have demonstrated themselves willing, while wearing the mantle of their professional degrees, to swear for pay to propositions that are simply not supported in science at all. It is not necessary to assume that none of them is sincere, or that all are venal. The simple reality is that "[a]n expert can be found to testify to the truth of almost any factual theory, no matter how frivolous . . . ." Weinstein, *supra*, 20 U. RICH. L. REV. at 482. "It is quite apparent that experts are readily available to present essentially frivolous theories . . . ." Berger, *A Relevancy Approach to Novel Scientific Evidence*, 115 F.R.D. 89, 91 (1987). As the Solicitor General last year pointed out:

> Gone are the days in which "codes of silence" made it difficult to find an expert witness willing to testify in certain fields. Today, attorneys can pick from a host of readily available expert witnesses, some of whom regularly purchase glossy advertisements in legal magazines. Such practices have seriously impaired the utility of expert testimony as an aid to the jury. At their extreme, they have led to an influx of "junk science" into the courtroom, peddled by those who are prepared to flaunt the arcanum of a particular expertise as a means of deceiving the trier

of fact. Judge Weinstein has noted that such testimony "validat[es] the case sufficiently to avoid summary judgment and forc[e] the matter to trial. At the trial itself, an expert's testimony can be used to obfuscate what would otherwise be a simple case."

The purveyors of "junk science" tend to be limited only by their own creativity. They range from those testifying that car accidents cause cancer, to those arguing that minute quantities of hazardous substances can cause a type of "chemical AIDS" responsible for virtually any type of ailment. The only things these "experts" have in common are that their theories have been emphatically rejected by reputable authorities as unfounded, and that they impose enormous costs both on litigants and society as a whole.[20]

II. THE FEDERAL RULES OF EVIDENCE ALLOW AND REQUIRE TRIAL COURTS TO CONTROL ABUSES OF OPINION TESTIMONY BY EXPERTS.

Trial judges, as the volume of litigation involving experts has ballooned, have exercised their responsibility to exclude opinions that are not recognizable science. The control they have been exercising has not depended just on *Frye*. It is firmly grounded, and was fully intended, in the Federal Rules of Evidence. Courts never have seriously questioned that the Federal Rules of Evidence generally (Rules 104(a), 401, 402, 602 and 701) and specifically (Rules 403, 702 and 703) contemplate that trial judges should exclude expert opinions that do not meet minimal criteria of scientific reasoning and methodology. *Cf. United States* v. *Abel*, 469 U.S. 45, 50 (1984) (Rules intend cross-examination for bias). As applied to experts, the purpose of the rules is consistent, and their provisions even sometimes redundant. Some courts have relied more often on one rule, some courts on another.

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[20] Starr, *Overview*, in PRESIDENT'S COUNCIL ON COMPETITIVENESS, A PLAN TO IMPROVE AMERICA'S SYSTEM OF CIVIL JUSTICE 13 (1992), quoting in part Weinstein, *Role of Expert Testimony and Novel Scientific Evidence in Proof of Causation* 12 (address to ABA Annual Meeting 1987).

A. Rule 104(a).

Rule 104(a) confirms the traditional function of the trial judge to rule on "[p]reliminary questions concerning . . . the admissibility of evidence." See also Fed. R. Evid. 1101(d)(1). In deciding such questions of admissibility, trial judges have always been allowed a wide discretion. "Whatever may be the general formulation, the essential requirement is that [mere speculation be not allowed to do duty for probative facts . . . ." *Galloway* v. *United States*, 319 U.S. 372, 395 (1943). The trial judge's role as applied to experts was stated by this Court in *Salem* v. *United States Lines Co.*, 370 U.S. 31, 35 (1962):

> the trial judge has broad discretion in the matter of the admission or exclusion of expert evidence, and his action is to be sustained unless manifestly erroneous.

Nothing in the Federal Rules of Evidence so much as hints at a contraction of this "broad discretion," or alters in any respect the "manifestly erroneous" standard of review.[21]

B. Rules 401 and 402.

Rule 401—never cited by petitioners at all—provides that "relevant evidence" is "evidence having any tendency to make the existence of any fact that is of consequence

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[21] See also, *e.g.*, *Spring Co.* v. *Edgar*, 99 U.S. 645, 658 (1879) ("very much a matter of discretion with the court whether to receive or exclude the evidence"); *Winans* v. *New York & E.R.R.*, 21 How. 88, 101 (1859) (judge "cannot be compelled to receive their opinions as matter of evidence"); *In re "Agent Orange" Product Liability Litigation*, 611 F. Supp. 1223, 1239 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987), *cert. denied sub nom. Lombardi* v. *Dow Chem. Co.*, 487 U.S. 1234 (1988); *cf. Bourjaily* v. *United States*, 483 U.S. 171, 177-79 (1987). Nothing in *Barefoot* v. *Estelle*, *supra*, holds otherwise; on the contrary, this Court there affirmed trial court rulings on admission of expert testimony, refusing to adopt a *per se* rule excluding "psychiatrists, individually and as a class." 463 U.S. at 885. The Court of Appeals here upheld the trial court's determination even applying (inconsistently with *Salem*) a *de novo* standard. J.A. 238.

to the determination of the action more probable or less probable than it would be without the evidence." That surely does not include opinions not grounded in science. Petitioners seem to assume that unsupportable opinions of people owning scientific credentials are relevant within the meaning of Rule 401. See Pet. Br. 19, 25. But generally a witness' opinion, unless it can qualify as expert testimony, is *not* relevant—no more than that of any lay person in the courtroom. "It is of course not necessary for the jury to accept the expert's opinion, but were it not really of possible weight with them, it would not be relevant . . ." Hand, *supra*, 15 HARV. L. REV. at 52.[22] By assuming the testimony is relevant, petitioners beg the question. Rule 402 unambigously declares that "Evidence which is not relevant is not admissible." Rules 401 and 402 alone, without more, would authorize a district court to exclude on relevancy grounds opinions which do not meet certain minimum standards as scientific expert testimony.

C. Rule 403.

Rule 403, which the District Court cited as one authority for its ruling in the present case, J.A. 229, in unambiguous language plainly authorizes the exclusion of prejudicial baseless opinion testimony:

> evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury . . . .

It certainly applies to expert opinions, even without *Frye*. *United States* v. *Jakobetz*, 955 F.2d 786, 794 (2d Cir.), *cert. denied*, 113 S. Ct. 104 (1992). "Fed.R.Evid. 403

[22] See also *Christophersen* v. *Allied-Signal Corp.*, 939 F.2d 1106, 1114 (5th Cir. 1991) (*en banc*) ("[e]ven if Rule 703 will not require the exclusion of such an unfounded opinion, general principles of relevance will"), *cert. denied*, 112 S. Ct. 1280 (1992); Berger, *supra*, 115 F.R.D. at 89; 3 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE ¶ 702[02] at 702-18 (1992) (Rule 702's "helpfulness test subsumes a relevancy analysis"); *cf. Huddleston* v. *United States*, 485 U.S. 681, 689 (1988).

provides an independent means for excluding expert testimony." *Hines* v. *Consolidated Rail Corp.*, 926 F.2d 262, 274 (3d Cir. 1991).

The "probative value" of non-science opinions from scientists is nil. The danger they hold for "unfair prejudice," "confusion," and "misleading" is practically infinite. See *Christophersen* v. *Allied-Signal Corp.*, 939 F.2d 1106, 1120-22 (5th Cir. 1991) (Clark, C.J., concurring), *cert. denied*, 112 S. Ct. 1280 (1992). Courts frequently and appropriately rely on Rule 403 to exclude unsupported expert testimony, just as the District Court did here.

D. Rules 701, 702 and 703.

Petitioners' brief ignores Rule 701, and asks this Court to reinterpret Rules 702 and 703 so as to leave them toothless, and to erase years of decisions in the courts of appeals that have applied both rules to screen out non-science opinions.

Rule 701 generally prohibits lay opinion testimony. As the Advisory Committee noted, it contemplated that "[i]f . . . attempts are made to introduce meaningless assertions which amount to little more than choosing up sides, exclusion for lack of helpfulness is called for by the rule." Committee on Rules of Practice and Procedure, Judicial Conference, *Rules of Evidence for the United States Courts and Magistrates*, 51 F.R.D. 315, 402-03 (1971).

Rule 702 provides a limited exception for opinions of experts, provided what they offer is "scientific, technical, or other specialized knowledge" that "will assist the trier of fact." Repeatedly the federal courts have applied this rule to ensure that expert opinions be in fact "scientific"—based on a reliable methodology grounded in the relevant scientific or specialized discipline. *E.g.*, *Loudermill* v. *Dow Chem. Co.*, *supra*, 863 F.2d at 569-70. Circuits that do not follow the *Frye* formulation recognize without hesita-

tion that Rule 702 requires trial judges to screen the scientific validity of the method invoked as the basis for the expert's conclusions. *E.g.*, *DeLuca* v. *Merrell Dow Pharmaceuticals, Inc.*, 911 F.2d 941, 954 (3d Cir. 1990) ("Rule 702's helpfulness requirement implicitly contains the proposition that expert testimony that is based on unreliable methodology is unhelpful and therefore excludable"); *In re Paoli R.R. Yard PCB Litigation*, *supra* n.3, 916 F.2d at 856-57 ("the court must analyze the reliability of that methodology under . . . Rule 702 . . ."); see also *Christophersen* v. *Allied-Signal Corp.*, 939 F.2d 1106, 1114 (5th Cir. 1991) (*en banc*) ("[d]istrict judges may reject opinions founded on critical facts that are plainly untrustworthy, principally because such an opinion cannot be helpful to the jury"), *cert. denied*, 112 S. Ct. 1280 (1992).

Rule 703 similarly requires that "[t]he facts or data in the particular case upon which an expert bases an opinion or inference . . . . [be] of a type reasonably relied upon by experts in the particular field." Otherwise, the general prohibition of Rule 602 applies: that a witness may not testify to matters without personal knowledge. The trial court "must therefore look behind [the] ultimate conclusion . . . and analyze the adequacy of its foundation." *Richardson* v. *Richardson-Merrell, Inc.*, 857 F.2d 823, 829 (D.C. Cir. 1988), *cert. denied*, 493 U.S. 882 (1989); see also *Lynch* v. *Merrell-National Labs.*, 830 F.2d 1190, 1196-97 (1st Cir. 1987) ("the district court's firm rejection here of foundationless expert testimony was necessary, admirable, and entirely within the discretion of the court under Federal Rules of Evidence 403 and 703"); *Lima* v. *United States*, 708 F.2d 502, 507 (10th Cir. 1983) (expert's opinion "did not reach the threshold standards for admissibility as set forth under Fed. R. Evid. 703"); *Coal Resources, Inc.* v. *Gulf & Western Industries, Inc.*, 865 F.2d 761, 772 n.4 (6th Cir. 1989) ("the requirement [of Rule 703] that an expert ground his opinion on reliable data rather than pure speculation"). Again, even the non-*Frye* circuits often use Rule 703

to reject opinions lacking a foundation in facts. *E.g.*, *Pennsylvania Dental Ass'n* v. *Medical Service Ass'n*, 745 F.2d 248, 262 (3d Cir. 1984), *cert. denied*, 471 U.S. 1016 (1985).

If all these courts for all these years have been so wrong about the meaning of the Federal Rules, it is awfully late to discover that. With rules and statutes, when a sensible understanding has been well established, the appropriate way to change it, if at all, is by a revised enactment, not by reinterpretation. *Cf.*, *e.g.*, *Monessen S.W. Ry.* v. *Morgan*, 486 U.S. 330, 338 (1988); *Square D Co*, v. *Niagara Frontier Tariff Bureau, Inc.*, 476 U.S. 409, 424 (1986); *Illinois Brick Co* v. *Illinois*, 431 U.S. 720, 736 (1977); *Flood* v. *Kuhn*, 407 U.S. 258, 283-84 (1972).

III. PETITIONERS PROPOSE A RADICAL CHANGE, WHICH SHOULD BE REJECTED.

Although petitioners' brief adopts a moderate tone, its modesty is Swiftian.[23] To accept its reasoning would compel a stark change in the functioning of federal trial judges. Instead of screening out opinions that are shown not to be scientifically based at all, the role of judges under petitioners' plan would become ministerial, reading resumés and then allowing testimony.

Petitioners came to this Court attacking the formula of *Frye* v. *United States*, 293 Fed. 1013 (D.C. Cir. 1923). Now that they are here, they go on to challenge the law applied in all the Circuits. They travel one by one through the Federal Rules of Evidence, arguing that none of the Rules authorizes trial courts to perform a meaningful screening function for expert opinion testimony, other than to inspect credentials.[24] Petitioners'

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[23] *Cf.* J. SWIFT, A MODEST PROPOSAL (1729).

[24] See, *e.g.*, Brief for Petitioners at 32 ("Rule 702 authorizes only a generic inquiry whether 'specialized knowledge will assist the trier of fact,' and a further inquiry whether the particular witness is 'qualified' . . . ."); *id.* at 35 ("Rule 703 provides no textual support

argument would destroy not just *Frye* but all screening by district judges of proffered opinion testimony from experts. They would leave the question whether the opinions of a purported expert are science as one more issue for the jury to decide. That has never been the law.[25]

Nor should petitioners' concept become the law. Under such a regime, each and every jury in a case involving technical issues could be required to reinvent the scientific method of inquiry, delving into fundamental issues about scientific proof, including the logic of replicable experiment and the nature of statistical inference. Every trial could turn into an academic seminar. No form of analysis could be excluded as long as some witness possessing a credential could be found to support it, no matter how many times other juries, judges, or scientists had concluded that such analysis was not reliable. A court could not exclude expert opinions based on polygraph tests, for example, or on hypnosis or narcoanalysis, and the reliability of each of these methods would have to be reargued *ab initio* in every case.

Even if every single jury reached the correct decision in the end, the burdens on the judicial system, on liti-

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for placing special limitations on expert testimony"); *id.* at 39 n.68 (Rule 403, although applicable, is an "unlikely basis for exclusion").

[25] "The jury was not absolute master of fact in 1791. Then as now courts excluded evidence for irrelevancy and relevant proof for other reasons." *Galloway* v. *United States*, *supra*, 319 U.S. at 390. That the judge rules on questions of admissibility of evidence is one of the most ancient defining characteristics of the common-law jury system, and certainly part of the right that was "preserved" by the Seventh Amendment. Whether an expert offered "qualifications and knowledge" that could offer reliable help in a particular case was always "a preliminary question for the judge presiding at trial." *Stillwell & Bierce Mfg. Co.* v. *Phelps*, 130 U.S. 520, 527 (1889); see also *Spring Co.* v. *Edgar*, *supra*; Fed. R. Evid. 104(a). As this Court observed with respect to the judge's role in summary judgment under Fed. R. Civ. P. 56, the jury system includes "due regard . . . also for the rights of persons opposing such claims and defenses to demonstrate . . . prior to trial, that the claims and defenses have no factual basis." *Celotex Corp.* v. *Catrett*, 477 U.S. 317, 327 (1986).

gants, and on society of such an approach would be staggering, and absolutely unnecessary. Furthermore, of course, given the inherent uncertainties of litigation, some erroneous decisions would occur. The guarantee of trial by jury gives a litigant the right to have a jury assess the particular facts involved in the case before it. The guarantee does not create a right to have each jury devise its own new and unique definition of scientific reality.

Petitioners nevertheless seek to dispose of the Federal Rules of Evidence by ignoring some and radically redefining others. Petitioners assume, first, that any opinions delivered by an expert—no matter how lacking in scientific methodology—are relevant under Rule 401 and therefore admissible under Rule 402. They argue that none can be excluded under Rule 702, because they say it deals only with qualifications and whether expert testimony generically would be helpful. Rule 703 has no place, they say, because they read it as simply a hearsay exception allowing experts to look at certain facts outside the record. Rule 403 gives them a great deal of trouble, because even petitioners cannot deny that its terms squarely apply. So they scarcely mention it, shrugging that it would be an "unlikely" vehicle, seldom overcoming the "presumption of admissibility" for expert opinions that petitioners discern in the Federal Rules as a whole. Pet. Br. at 37, 38 n.68.

Petitioners bear an extraordinary burden when they suggest that for the past nearly two decades courts in every circuit have been mistaken in excluding unsupported expert opinions under Rules 702 and 703 as well as Rule 403—just as those courts had done prior to the adoption of the Federal Rules. If the drafters of the Rules, and this Court and the Congress in adopting them, had intended to strip trial judges of their customary and essential role, it is remarkable that nothing in the history of the Rules mentions such a thing.

Yet petitioners ask this Court not just to do away with *Frye*, but also to hold that under the Federal Rules

of Evidence district judges have virtually no choice but to allow into evidence any opinion by a person whose credentials satisfy the undemanding standard of Rule 702.[26] It is their attack on the trial judge's usual role under the Federal Rules that makes this Court's decision in this case so important.

IV. "TOXIC TORT" CLAIMS PARTICULARLY REQUIRE JUDICIAL SCREENING OF OPINION TESTIMONY.

Human illnesses have always been a part of human life. Only in the past few decades, however, have chemical products come to play a large role in manufacturing and health care, and only in very recent years has technology made it possible to measure in incredibly minute quantities—one part per billion or less—the presence of a particular substance in human tissue or the environment.

The result has been "toxic tort" litigation: a new kind of tort suit in which individuals claim that exposure to an often infinitesimal quantity of a substance is responsible for an illness or physical condition. Such claims cannot be proved by evidence that is part of common experience, like two automobiles colliding. Instead, the claims nearly always ask juries to determine liability based entirely on testimony of experts as to what science knows about things that cannot be seen, felt, or experienced. Typically, besides injury (which may lack any observable symptoms), it is necessary to prove significant exposure to the substance; that the substance is capable of causing the illness or injury; and that in fact it did so in the particular case. Often all depend on expert testimony.

Given the wide dispersal and use of chemical products of all kinds, "toxic torts" are very easy to allege. If reliable science does not support the claims, however, no tort has occurred. That has not stopped dubious claims

[26] A person may qualify as an "expert" under Rule 702 by virtue of "knowledge, skill, experience, training, or education."

from being brought.[27] A judge who is also a distinguished commentator on the Federal Rules has cautioned that

> careful scrutiny of proposed expert evidence is especially appropriate in the toxic tort area. The uncertainty of the evidence in such cases, dependent as it is upon speculative scientific hypotheses and epidemiological studies, creates a special need for robust screening of experts and gatekeeping under Rules 403 and 703 by the court.

In re "Agent Orange" Product Liability Litigation, *supra* n. 21, 611 F. Supp. at 1260 (Weinstein, C.J.).

The reality of what expert testimony could become, unless trial courts continue to exercise their screening role, is apparent in a group of toxic-tort claims that are currently in court, *In re Paoli R.R. Yard PCB Litigation*, *supra* n. 2. In these cases a number of plaintiffs who resided near the Paoli, Pennsylvania railroad yard claimed that forty-seven different kinds of illnesses[28] had been caused by alleged exposure to PCBs (polychlorinated biphenyls)[29] that had spilled on soil at the railroad yard. One group of experts proffered by the plaintiffs was cross-examined in depositions, and then their opinions were excluded by the trial judge. After the court of appeals remanded and suggested that *in limine* evidentiary hearings be held, the plaintiffs presented a new set of experts,

[27] Plaintiffs in such cases of course are not necessarily insincere. To seek an external agent to blame for an ailment "is human nature." *In re "Agent Orange" Product Liability Litigation*, 818 F.2d 145, 149 (2d Cir. 1987), *cert. denied sub nom. Pinkney* v. *Dow Chem. Co.*, 484 U.S. 1004 (1988).

[28] These included asthma, insomnia, anemia, anorexia, swollen hands, seizures, enlarged prostate, Parkinson's disease, cardiovascular disease, arthritis, gastritis, lung disease, brain cancer, hypertension, impotency, jaundice, pancreatic cancer, muscle cramps, irritability, and stiff joints.

[29] PCBs became common in many industrial processes and products beginning about 1930, and were used for decades in railroad electrical transformers to prevent fires on freight and passenger trains.

whose depositions were taken. The trial judge then held five days of pretrial evidentiary hearings and a day of argument, at significant expenditure of judicial and other time and resources, after which he excluded the second set of opinions under Federal Rules of Evidence 403, 702 or 703.[30] The opinions of these *Paoli* experts vividly illustrate lack of the essential prerequisites: (1) a basis in fact rather than speculation; (2) a theory based on principles followed in the discipline; (3) a scientifically recognized methodology.

A. Lack of Factual Basis.

1. A chemist offered his opinion that the Paoli residents must have high levels of PCBs in their bodies as a result of airborne transmission, simply because high levels of PCBs had been found in the soil. By a formula of his own devising, used by no one else, he sought to infer from two soil samples the air levels of PCBs, from which he inferred high levels in the plaintiffs. He ignored actual air samples which existed—and which contradicted the results of his theory. He also ignored the actual measured body samples of the plaintiffs' PCB levels—which also contradicted his numbers.[31]

2. A self-styled "immunologist" (who had completed only one graduate-level course that included immunology, but owned a firm providing litigation-support services) concluded "[w]ithin a reasonable degree of scientific ceratinty" that because of PCB exposure, the plaintiffs must have developed altered immune systems and therefore were predisposed to many diseases. He conceded that he presented this opinion without knowing the actual PCB body levels of any plaintiff, and simply "assumed" these to be high. He acknowledged that his conclusions

[30] See n. 2, *supra*; 916 F.2d at 836, 854-55, 858, 859. The rulings excluding the second set of opinions are currently challenged on appeal.

[31] *Paoli* appendix in U.S. Court of Appeals, Third Circuit, Nos. 88-1973 etc. (hereinafter "P.A.") at 4224-28, 9256-57 (Herbert Allen, Ph.D.).

that such alleged injury had occurred could be verified only by a series of tests that he had not performed.[32]

3. A physician opined, without knowing any plaintiff's level of exposure, that PCBs had been causes of the various illnesses alleged,[33] although it is "the most fundamental and pervasive concept in toxicology" that dose level must be known to determine whether a substance can cause a reaction.[34] The district court found as to this physician, whose office was a post office box, that "Since 1976, substantially all of the income that she generated from her professional activities has come from work in cases that were involved in litigation. . . . She has been involved in over 8,000 cases since 1976, and has given over 800 depositions . . . ." 1992 WL 323493 at *2. The doctor testified:

> Q. . . . Now, Doctor, I believe that you testified that throughout your practice, you have, from time to time, examined people whom you believe to have been exposed to PCBs, is that correct?
>
> A. That's correct.
>
> Q. And is it fair to say that you can't remember a single case in which you've examined such a person, where you reached—where you reached a conclusion that PCBs did not cause any adverse health effects, is that correct?
>
> A. Well, that's probably true.[35]

4. The same physician repeatedly offered medical diagnoses without examining patients. For example:

> Q. Now, did you make a determination that exposure to transformer fluid caused Patricia Ingram to suffer from asthma?
>
> A. In part.

[32] P.A. 3354, 5987, 6022, 6054-55, 6120, 6133 (Arthur C. Zahalsky, Ph.D.).

[33] CASARETT & DOULL'S TOXICOLOGY 18 (M. Amdur *et al.* 4th ed. 1991).

[34] P.D. at 66-67 (Janette D. Sherman, M.D.).

[35] P.T. 140.

Q. Okay. And you didn't examine Patricia Ingram, did you?

A. No.[36]

5. Another expert, who was a physicist and mechanical engineer holding a Ph.D. and referred to himself as a "professional environmental scientist," concluded that the plaintiffs had been exposed to PCBs at unusually high levels. However, he could not provide any factual data to support what he called his "scientific conclusion." [37]

B. Lack of Scientific Theory.

The opinions of experts that trial judges exclude often are characterized by absence of any articulable supporting scientific theory, or by assertions of having suddenly discovered a truth unknown to all others:

1. The "immunologist" previously referred to explained his scientific reasoning to be that if the plaintiffs were sick, it was because of PCBs:

Q. So you're saying that because these people have the conditions they have, you think that's enough

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[36] P.T. 153. The same physician was asked as to ten plaintiffs whose afflictions she attributed "to a reasonable degree of medical certainty" to PCBs:

Q. Did you examine those ten people?

A. I examined three of the ten.

Q. But you did not examine the others?

A. I did not examine the other seven, that's correct. . . .

Q. Did you request that those tests be done on these plaintiffs before rendering your opinion?

A. No.

P.D. 30-33; P.T. 166.

[37] Q. Do you have any information, sir, as to the amount of PCBs in use at the rail yard at any time?

A. I don't know. . . .

Q. Do you have any information about the levels of PCBs that were in the run-off?

A. I know of no measurements, no. . . .

Q. Have you made any effort to quantify the intake of PCBs that you believe any plaintiff experienced in this case?

A. No, I don't believe that can be done.

P.A. 8744, P.T. 85-86, 120-22 (Ian C. T. Nisbet, Ph.D.).

to show that they got them from being exposed to PCBs, is that right?

A. Yes, I do.

Q. Just because they have the conditions?

A. Because they have these conditions, yes.[38]

When it was pointed out that an article he had cited as authority concerned another chemical, not PCBs, he replied, "it doesn't matter to me." [39] Other physicians and scientists stated that "[t]here is no evidence to support the theory that PCBs suppress immune functions in humans;" that the expert's opinions "are mere conjecture;" that his methodology "is scientifically inadmissible;" and that "[n]o doctor would rely on the tests described in [the expert's] affidavit for any purpose whatsoever." [40]

2. A toxicologist, who said that "I have been involved in a lot of medical causation cases," claimed to have devised after being retained for the case a unique "fingerprinting" method, not known to anyone else, by which she could look at chromatograms and decide, without measuring or using instrumentation, whether molecules of PCBs in a plaintiff's blood had originated at the Paoli Railroad Yard. (She concluded in each case that they had.) She acknowledged that "I can't think of anybody" who had claimed in any published report that such a process was possible. With the exception of one page of handwritten notes, she had no work papers or written report indicating what procedures she had followed, her

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[38] P.A. 6275 (Arthur C. Zahalsky, Ph.D.).

[39] P.A. 6115. Nor could he cite other studies:

Q. Well, what studies are you aware of which would enable you to compare the experiences of the people living adjacent to the railyard to other people?

A. The studies that I have read throughout the years.

Q. Can you name one or two of them?

A. Not even one.

Q. Why not even one?

A. Because I don't recall them. I don't remember these studies. (P.A. 6267.)

[40] P.A. 3814, 4252, 9942, 9944.

conclusions, or the basis for her conclusions. A professor of toxicology and pharmacology who examined her submission stated that the equipment used could not support such an analysis, and that because of the absence of controls and the inability to reproduce her experiment, "[h]er analysis thus lacks any semblance of scientific validity." [41]

3. Published authorities whom experts invoke sometimes are only press clippings, as when a *Paoli* expert cited a supposed author who turned out to be the name of a newspaper.[42] Another expert physician offered by the plaintiffs relied principally on newspaper reports.[43]

C. Lack of Scientific Methodology.

It is an axiom of medicine (as well as of logic) that diagnosis requires elimination of likely other causes before a particular cause can be assigned—what physicians refer to as "differential diagnosis." In particular, known common causes of a disease must be eliminated before it

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[41] P.A. 3328-29, 4191-95, 4954, 5031-32, 5063-67, 5220-21, 5244-45, 5328, 5331-34, 5336-38 (Deborah Barsotti, Ph.D.).

[42] Q. You identified a study by Battleboro or a reference by Battleboro as supporting your contention that PCBs were found to be associated with asthma. Do you have that study with you today?

A. I'm glad you asked me. Yes, I brought in Battleboro, I beg your pardon. It refers to the B[r]attleboro press. . . . It was not an author, and that was my mistake . . . .

Q. . . . [Y]ou were referring at some point to what you called the Battleboro article, and you produced a two-page article which appears to be a newspaper article . . . . And [the subject of the article] is quoted as saying: Quote, we lost because we can't prove that the oil in the well made us sick, close quote. Is that correct? . . .

A. That's what it says, yes.

P.D. 995-99; see also *id.* 375-76, 439-40.

[43] P.A. 6471-72, 6389, 6411, 6416, 6471-72, 6491 (Harry Shubin, M.D.).

is attributed to something else." [44] That essential component of medical methodology disappeared from the opinions offered by physicians in *Paoli*:

1. One physician offered by the plaintiffs was willing, based on a plaintiff's assertion of insomnia and irritability, to testify "to a reasonable degree of medical certainty" (although he did not examine either the individual or even his medical records) that the alleged conditions were caused by PCB exposure "until otherwise proven":

> Q. Regardless of any of the number of other factors or possible causes?
>
> A. That's correct.[45]

2. Another physician acknowledged, sometimes impatiently, that all the diagnoses offered failed to eliminate likely known causes. For high blood pressure:

> Q. . . . Did you consider any alternative causes other than PCB exposure in determining what caused his elevated blood pressure?
>
> A. Not specifically. I wouldn't rule them out, but I have not looked at any others specifically.
>
> Q. Did you look at any generally?
>
> A. No.

For stomach cancer:

> Q. Well, you said that PCBs was a significant contributing factor [to the plaintiff's stomach cancer]. Are there others that you believe may have played a role?
>
> A. There may have been. I don't know.

For asthma:

> Q. Is is your opinion, Doctor, that her asthma was caused by exposure to transformer fluid?
>
> A. I think it is a factor, yes. . . .

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[44] See, *e.g.*, P. CUTLER, PROBLEM SOLVING IN CLINICAL MEDICINE 154-56 (2d ed. 1985); R. JUDGE, *et al.*, CLINICAL DIAGNOSIS 511 (4th ed. 1982); M. DELP, *et al.*, MAJOR'S PHYSICAL DIAGNOSIS 42 (9th ed. 1981); see also *In re "Agent Orange" Product Liability Litigation, supra* n.21, 611 F. Supp. at 1250-54.

[45] P.A. 7124, 7169-71 (G. John DiGregorio, M.D., Ph.D.).

Q. Have you ruled out any causes of asthma other than exposure to transformer fluid in the case of Patricia Ingram?

A. No.

Q. You have not done that?

A. That's what I just said.

For episcleritis:

Q. What causes did you rule out?

A. I believe it was his exposure to the dielectric fluids, which included PCBs that caused his multiple problems, including his episcleritis.

Q. I know that, Doctor. What I'm asking you is what alternative causes did you consider and rule out as potential causes of his episcleritis, other than exposure to PCBs?

A. I can't think of any.

For anemia:

Q. Did you rule out the other known causes of anemia in Mr. Cunningham's case?

A. No.[46]

3. Another physician, who described himself in his resumé as "Medical Advisor" to the "Federal Judiciary," examined three plaintiffs and said that they suffered from multiple illnesses caused by PCBs, even though none of their treating physicians had so concluded. He also stated that PCBs had caused the death of a man he had never seen, whose medical records he had never examined, and the circumstances of whose death were unknown to him. He also concluded that PCBs had caused severe illnesses in a plaintiff whose blood test showed no PCBs at all. He explained that his scientific method was simply to attribute all adverse medical conditions to PCBs "until I would be shown that I was wrong."[47]

4. The toxicologist previously referred to also offered opinions "to a reasonable scientific certainty" that each

[46] P.D. 206, 388-89, 437-38, 679, 917.

[47] P.A. 3278, 3282-91, 3296, 6394, 6438-40, 6723 (Harry Shubin, M.D.).

plaintiff who retained her (none of whom she had ever met) had illnesses caused by PCBs, based solely upon medical records and an information form supplied by their counsel. Other scientists concluded that her opinions were "personal conjectures, not the result of essential scientific analysis," and "do not constitute objective, unbiased opinions based upon valid scientific data and method, and would not withstand review by a qualified panel of her peers."[48]

• • • •

Whatever such opinions are based on, it is not science. They are no more helpful to a factfinder than the conjecture of a passerby on the street. But if uttered from the lips of an "expert," they are likely to be valued as much more. The Federal Rules of Evidence expect such gross abuses of the invitation to expert witnesses to be screened out by trial judges, as these were. That screening, like other evidentiary rulings, should not be encumbered with costly procedural obstacles. This Court should not render any decision that could be interpreted as forbidding trial judges from continuing to perform that role so essential to the integrity and reliability of the factfinding process.

CONCLUSION

For the reasons stated, the judgment should be affirmed.

Respectfully submitted,

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[48] P.A. 3329-30, 4052, 4094, 4917-21, 5140-43, 5156, 5160-61, 5415-20, 5813-16 (Deborah Barsotti, Ph.D.).

ADDENDUM

ADDENDUM

The Federal Rules of Evidence provide in part:

Rule 104

Preliminary Questions

(a) Questions of Admissibility Generally. Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b). In making its determination it is not bound by the rules of evidence except those with respect to privileges. . . .

Rule 401

Definition of "Relevant Evidence"

"Relevant evidence" means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.

Rule 402

Relevant Evidence Generally Admissible; Irrelevant Evidence Inadmissible

All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible.

Rule 403

Exclusion of Relevant Evidence on Grounds of Prejudice, Confusion, or Waste of Time

Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger

of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

Rule 602

Lack of Personal Knowledge

A witness may not testify to a matter unless evidence is introduced sufficient to support a finding that the witness has personal knowledge of the matter. Evidence to prove personal knowledge may, but need not, consist of the witness' own testimony. This rule is subject to the provisions of Rule 703, relating to opinion testimony by expert witnesses.

Rule 701

Opinion Testimony by Lay Witnesses

If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are (a) rationally based on the perception of the witness and (b) helpful to a clear understanding of the witness' testimony or the determination of a fact in issue.

Rule 702

Testimony by Experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Rule 703

Bases of Opinion Testimony by Experts

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before

the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

Rule 704

Opinion on Ultimate Issue

(a) Except as provided in subdivision (b), testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.

(b) No expert witness testifying with respect to the mental state or condition of a defendant in a criminal case may state an opinion or inference as to whether the defendant did or did not have the mental state or condition constituting an element of the crime charged or of a defense thereto. Such ultimate issues are matters for the trier of fact alone.

Rule 705

Disclosure of Facts or Data Underlying Expert Opinion

The expert may testify in terms of opinion or inference and give reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

Rule 1101

Applicability of Rules

* * * *

(d) Rules inapplicable. The rules (other than with respect to privileges) do not apply in the following situations:

(1) Preliminary questions of fact. The determination of questions of fact preliminary to admissibility of evidence when the issue is to be determined by the court under rule 104.

* * * *